



Lameness in Horses

Diagnosing



Brief background on lameness

- Lameness must be examined under a variety of conditions to fully assess the horse's capabilities since a horse may not show the same grade of lameness under different circumstances.
- The degree of lameness may vary depending on the ease or difficulty of movement, the stage of the movement or exercise, and the cause of the lameness. The examiner must be knowledgeable in equine anatomy, normal conformation and gaits, regional anesthesia, and imaging techniques and be able to recognize forelimb and hindlimb lameness.
- Keep horses off anti-inflammatories, such as Bute or Banamine, for 24 to 48 hours before the exam because those medications can mask pain and lameness.

1. General Recognition of Lameness

Recognition of lameness is a key skill to successful diagnosis. The most consistent sign of a unilateral forelimb lameness is the head nod. The head and neck of the horse rise when the lame forelimb strikes the ground and is weight bearing, and fall when the sound limb strikes the ground. The sacral (pelvic) rise is the most consistent and easily observed sign of hindlimb lameness. The entire pelvis and sacrum rise when the lame limb strikes the ground and is weight bearing, and fall when the sound limb strikes the ground. Both head nod and sacral rise serve to reduce concussion on the lame limb.

Use the lameness scale adopted by the American Association of Equine Practitioners to, in effect, grade a horse's lameness. If a horse registers 0, no lameness is perceptible. A 5 is the most extreme

Video links:

1. https://www.youtube.com/watch?v=xn_VpI_9XCk
2. <https://www.youtube.com/watch?v=7RWd3pfWNk4>

The Lameness Scale

The American Association of Equine Practitioners (AAEP) developed a lameness scale to aid veterinarians and horse owners in communicating about cases and recordkeeping:

0: Lameness not perceptible under any circumstances.

1: Lameness is difficult to observe and is not consistently apparent, regardless of circumstances (e.g. under saddle, circling, inclines, hard surface, etc.).

2: Lameness is difficult to observe at a walk or when trotting in a straight line but consistently apparent under certain circumstances (e.g. weight-carrying, circling, inclines, hard surface, etc.).

3: Lameness is consistently observable at a trot under all circumstances.

4: Lameness is obvious at a walk.

5: Lameness produces minimal weight bearing in motion and/or at rest or a complete inability to move.

2. History

The first step in a lameness evaluation is a thorough history of both the horse and the injury to narrow down differentials. Information gathered about the horse includes sex, breed, age, training regimen and prior use. The history of the injury includes the date of onset of lameness, how severe the lameness has been, how it occurred (if known) & Interim management must be noted (Response to anti-inflammatory or analgesic medications may be useful).

3. Foot exam

Nearly 90% of lameness occurs in the foot. Evaluate the trimming of the hooves, the shoeing, & note the interval since the last shoeing.

A number of abnormalities such as broken toe/pastern axis; mismatched hoof angles; under-run, contracted, and sheared heels; and disproportionate hoof size are seen more frequently in lame than in sound horses. Shoes should be left on during the initial stages of the examination, because removing them might make the horse footsore and preclude further examination with the horse being trotted or ridden. Shoes should be removed for complete and thorough examination of the foot when the lameness has been localized to the foot and any exercise needed for diagnosis has been completed.

4. Standing Exam/ Exam at rest

A standing examination is done at a distance to appraise the horse's conformation, symmetry, weight bearing and balance. This is followed by a more careful visual examination and palpation of specific anatomic structures for obvious injuries, muscle loss, swelling, joint effusion, heat, and pain.

Do a manipulation of muscles, joints, bones, and tendons, joint flexion tests, and application of hoof testers to reveal evidence of injury or stress.

5. Conduct Joint Flexion Exams (subjective tests)

A standing examination is done at a distance to appraise the horse's conformation, symmetry, weight bearing and balance. This is followed by a more careful visual examination and palpation of specific anatomic structures for obvious injuries, muscle loss, swelling, joint effusion, heat, and pain.

Do a manipulation of muscles, joints, bones, and tendons, joint flexion tests, and application of hoof testers to reveal evidence of injury or stress.

Video Links

Front lower limb flexion test	https://www.youtube.com/watch?v=eoltkZRFNDY
Front upper limb flexion test	https://www.youtube.com/watch?v=WdsnotUFNXI
Hind lower limb flexion test	https://www.youtube.com/watch?v=2WsaLXcDBi8
Hind upper limb flexion test	https://www.youtube.com/watch?v=1btf2C9ISqc
Positive flexion test	https://www.youtube.com/watch?v=k2zSMtEWKhY

6. Application of testers to the feet

Hoof testing involves the use of a pincer-like tool to put pressure on specific regions of the foot in search of a pain response. As with flexion exams, the key to accurate interpretation of hoof tester examination is knowledge of what constitutes a normal response. This can only be gained through a methodical approach, and lots of experience with different types of horses and hooves.

Once these things have been done, the veterinarian usually has determined which limb is lame, and may have an idea where the pain is located within that limb.

At this point, nerve blocks may then be necessary to determine precisely where the pain is located.

Video links:

<https://www.youtube.com/watch?v=R-B4j6XG9DE>

<https://www.youtube.com/watch?v=8QJUEY5usNg>

7. Movement Exam

Observe the horse in movement. Lameness is mostly evaluated at the trot. Most thorough lameness exams are performed on firm to hard, consistent footing. Examination often includes trotting in hand in straight lines, and circles to both directions. It may also include moving a horse up or down inclines or through specific patterns. For the diagnosis of some types of lameness problems, having a rider up can be advantageous.

In addition to watching the horse move at the walk and palpating the legs, see the horse jog in a straight line and lunge in both directions. Jog the horse over multiple surfaces because hard ground can exacerbate bone problems and soft ground can often highlight soft tissue injuries.

Video link for lunging:

<https://www.youtube.com/watch?v=XmyJeyXu6cY>

7. Movement Exam (continued)

The horse should initially be examined by walking and jogging in hand with a loose line to the halter so that the movement of the horse is not restricted. A firm, nonslippery surface (eg, hardpack fine gravel) is ideal to trot on a straight line and to lunge on a firm surface. It also provides an opportunity to listen to the footfall and consider this information along with the visual appraisal. However, feet of different sizes and shapes and different shoes make slightly different impact sounds, often rendering these sounds of little diagnostic value. Frequently, lameness is more pronounced when the horse is worked in a circle. Circling can be done on a lunge line, free exercise in a large round pen, in hand, or under saddle. Lunging on asphalt or concrete predisposes the horse to slipping and injury but may be done in selected cases to accentuate a very subtle hoof or lower limb lameness. Both forelimb and hindlimb lameness may become worse when the horse is circled; most of the time, the lameness is accentuated when the affected limb is on the inside of the circle.

Slowing down the pace at the trot often illustrates a subtle lameness better, because the horse loses its momentum and struggles with suspension in the affected limb(s).

8. Movement with weight

Having a rider on their back is going to make horses behave differently because they're now having to compensate for a rider, so they are going to have to move their body a little bit differently. And just that excess weight can exacerbate a lameness (for example, a dressage rider might be able to feel that a horse is uneven if prior observations were inadequate).

A ridden assessment of the horse may be necessary, particularly with a subtle lameness that can only be observed under saddle. A multiple-limb lameness without an obvious single-limb lameness may also be detected. The clinical signs may be minor (eg, the horse refusing certain movements or activities, slight head tilts, or tail swishing). However, a good rider can, often inadvertently, hide a problem by his or her inherent expertise and ability to “correct” difficulties.

9. Nerve and joint blocks / Diagnostic Anaesthesia

Nerve blocks are used to methodically numb portions of the limb as a means of finding the site of pain, using the process of elimination. Administer the injection of a local anesthetic agent around specific nerves or into specific joints or other structures. The horse is examined at the trot before the block, and the degree of lameness determined. Then the area in question is numbed, and the horse is asked again to trot off. Either there is improvement in the lameness or not. If there is not, the process is continued on specific nerves progressing up the limb until the lameness is visibly lessened. Specific joints and tendon sheaths can also be blocked for a more specific localization of lameness. Blocks into a joint or tendon sheath require surgical cleanliness and technique to prevent infection of these structures. Limitations of blocking include spread of local anesthetics to adjacent regions, clouding the interpretation of the results.

Once the site of pain is located, diagnostic imaging is used to view the structures in the area and provides additional information about the nature of the injury. Diagnostic imaging includes radiography to image bone and ultrasound to image soft tissues, but may also include thermography, MRI, CT Scan and Nuclear Scintigraphy (bone scan).

Video link: <https://www.youtube.com/watch?v=6MVNcy9YE0I>

Elimination spectrum examination

1. Observing the horse execute movements such as turning short, backing, “hopping” on one forelimb (with the other forelimb held up), negotiating a curb, turning in tight circles, and walking uphill and downhill should be done. These tests help determine whether reduced proprioception, weakness, or spasticity may be the cause of the gait abnormality.
2. A neurologic examination should be part of the workup since conditions such as Wobblers Syndrome and Equine Protozoal Myeloencephalitis (EPM), as well as trauma and other diseases can masquerade as lameness. The examination should include evaluation of cranial nerve and upper and lower motor neuron function. The back and neck should be thoroughly examined with the horse restrained and standing square on a level surface. Flexibility and extensibility of the back can be checked by alternately pinching the midline in the midthoracic and sacrococcygeal regions, whereas lateral flexion can be checked by turning the horse short around its own axis.
3. A blood test to detect drugs that may camouflage lameness or that might contribute to the lameness.
4. Samples of blood, synovial (joint) fluid, and tissue taken for examination to determine if infection or inflammation are present.